On non-Ising phase transitions in the 3D standard Ashkin-Teller model

D. Jeziorek-Knioła^a, G. Musiał^a, J. Rogiers^b and S. Dylak^c

^aFaculty of Physics, Adam Mickiewicz University, ul. Umultowska 85, 61-614 Poznań, Poland

Polalid Vetleelielee Ueie

^bInstituut voor Theoretische Fysica, Katholieke Universiteit Leuven, Celestijnenlaan 200D, 3001 Leuven, Belgium

 $^c{\rm Faculty}$ of Educational Studies, Adam Mickiewicz University, ul. Szamarzewskiego 89,60-568Poznań, Poland

The phase transition line in the Ising point region is studied in the 3D standard Ashkin-Teller model on a cubic lattice. This model of the multicomponent order parameter is one of the important reference points in statistical physics and it implies the interesting and complicated phase diagram. The main motivation to our study was nonuniversal behavior announced for this line [1].

The large-scale Monte Carlo simulations using the Binder and Challa like cumulants are performed. Accurate analysis [2] to exclude the latent heat inherence is applied. Specific behavior of the Challa like cumulants is discovered and its interpretation is proposed. Preliminary conclusions as to the continuous but nonising character of these phase transitions beyond the Ising point close the paper.

[1] G. Musiał, J. Rogiers, Phys. Status Solidi **B 243**, 335 (2006)

[2] G. Musiał, Phys. Rev. B 69, 024407 (2004)

— 13.4 cm –

Subject category :

2. Quantum and Classical Spin Systems

Presentation mode : poster

Corresponding author : G. Musiał

Address for correspondence :

Faculty of Physics, Adam Mickiewicz University ul. Umultowska 85 61-614 Poznań Poland

Email address : gmusial@amu.edu.pl

 $9.7~\mathrm{cm}$